DOCUMENT RESUME

ED 189 956 HE 012 879

AUTHOR Brown, Kenneth G.
TITLE Dropout Rates: A Longitudinal Analysis of Student Loan Users Compared With Users of Other Forms of Financial Assistance. AIR Forum 1980 Paper.
PUB DATE Apr 80
NOTE 21p.: Paper presented at the Annual Forum of the Association for Institutional Research (20th, Atlanta, GA, April 27-May 1, 1980).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Students; Comparative Analysis; *Dropout Rate; Dropout Research; Dropouts; Higher Education; *Parent Financial Contribution; Socioeconomic Status; *Student Financial Aid; *Student Loan Programs; *Withdrawal (Education)
IDENTIFIERS *AIR Forum 1980

ABSTRACT

Dropout rates were investigated with a special emphasis on comparing loan users with users of other forms of aid. Differences in dropout rates for students in the following groups were analyzed: loans only, loans in combination with other aid, other aid only, and aid from families only. Using analysis of variance the following variables were assessed: socioeconomic status (SES), ability, grade point average, and parental income. Data were obtained from the National Longitudinal Study of the High School Class of 1972, and analyses were conducted for the academic years 1972, 1973 and 1974. Dropout rates were higher in the first year than in the following two years. Students relying on loans only or family aid only had higher dropout rates than students using loans in combination with other types of aid. Low SES students had higher dropout rates when relying exclusively on loans or on familial aid than did high SES students. (Author/SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED189956

Dropout Rates: A Longitudinal Analysis of Student Loan Users Compared with Users of Other Forms of Financial Assistance

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

A.I.R.

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

by

Kenneth G. Brown

Senior Analyst

Center for the Study of Higher Education

University of Arizona

Tucson, Arizona 85721

(602) 626-1216

HE 012 879

THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper was presented at the Twentieth Annual Forum of the Association for Institutional Research held at the Peachtree Plaza Hotel in Atlanta, Georgia, April 27 - May 1, 1980. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum papers.

Mary Corcoran
University of Minnesota
(Editor, AIR Forum Publications)

ABSTRACT

Student financial aid programs have changed drastically over the past twenty-five years. Many new loan and grant programs have come into existence at the federal, state, and institutional level over this period. While more programs are available now than in the past, little has been published regarding the dropout rates of students using various forms of financial aid.

The purpose of this paper was to investigate dropout rates with a special emphasis on comparing loan users with users of other forms of aid. The financial-aid groups used were loans only, loans in combination with other aid, other aid only, and familial aid only. Differences in dropout rates for students in the several financial-aid groups were analyzed using ANOVA. The variables socioeconomic status (SES), ability, grade-point average, and parental income were used in these ANOVA's as blocking factors to obtain separate estimates of dropout rates for categories of these variables and to test for differences in these rates. These analyses were accomplished for the academic years 1972, 1973, and 1974 and thus allow longitudinal estimates of the dropout rates. Data for these analyses were extracted from the National Longitudinal Study of the High School Class of 1972.

When dropout rates of various financial-aid groups were compared for the years examined in this study, it is evident that the first year of schooling is critical. Dropout rates were higher in the first year than in the following two years and the type of aid used in the first year seems to have an effect not indicated by the analyses of later years. Students relying on loans only or familial aid only had higher dropout rates than students using loans in combination with other types of aid. This phenomenon appears to affect levels of SES differentially. Low SES students had higher dropout rates when relying exclusively on loans or on familial aid than did high SES students.

The next decade is predicted to be a difficult period for higher education both in terms of student enrollment and finances. A decrease of 25% will occur in the number of persons in the traditional college age cohort, the 18 to 21 year age group, which accounts for approximately 75% of undergraduate enrollment (Glenny, 1979, p. 35). Financial pressures that developed in the late 1970's are predicted to continue through the 1980's (Morgan, 1979, pp. 48-49). These two problems are obviously related since a large portion of any school's revenue, whether the school is public or private, is tied quite closely to the number of students enrolled. In order to keep enrollment up, schools are going to have to develop more effective recruitment and retention programs. The need will be to get qualified students into school and once there to keep them there. The key to any retention program is the identification of those factors which are associated with high dropout rates and development of strategies and supporting policies, either locally, regionally or nationally, that will diminish the effects of these factors.

This paper will examine the dropout rates of students in several student-aid categories with a specific emphasis on those students using loans. Very little has been published in the literature on the association between borrowing money to finance education and student persistence. Some of the evidence available on this topic seems contradictory.

Alexander Astin (1975, pp. 60-62) found that loans generally have a negative effect on persistence for both white men and women; while persistence of blacks at predominantly white schools seems to be enhanced by the use of loans. On the other hand, Trent and Medsker (1968, p. 107) found that persisters sought loans more frequently than did withdrawers. A study by W. C. Blanchfield (1971, p. 4) at Utica College found that loans were not highly

associated with either persisters or dropouts. Thus, by choosing any one of the above studies, it would be possible to support almost any argument one wished with respect to the effects of loans on persistence. However, the changes in student aid policies and programs over the period covered by these studies would make close comparison of the results of these studies tenuous at best.

Description of the Sample and Statistical Design

The sample data used in this study were extracted from the public use file of the National Longitudinal Study of the High School Class of 1972 (NLS). The NLS, supported from its inception in 1968 by the National Center for Education Statistics, is designed to provide longitudinal data on a large, national probability sample of American high-school students as they leave secondary institutions and move into early adulthood. Survey data for the base-year study were assembled in the spring of 1972. Subsequent follow-up surveys of the original cohort, plus a back-up and augmentation sample to compensate for non-participation of some schools in the original survey, were made in October of the years 1973, 1974, and 1976. The population consisted of all twelfth graders enrolled in all high schools in the 50 states and the District of Columbia. The final NLS sample includes 1,318 schools and 22,532 students (Levinsohn, Lewis, Riccobona, and Moore, 1976, pp. iii, 5-7).

In order to compare the dropout rates of loan users with users of other types of financial aid, the group of NLS participants reporting full-time postsecondary student status in the fall of 1972 and whose financial aid status could be determined were categorized into one of the following five subgroups: Group I, students using only loans; Group II, students using loans

and other aid with loan aid equal to or greater than other aid; Group III, students using loans and other aid with loan aid less than other aid; Group IV, students using other aid only, e.g., grants, scholarships or work-study aid; Group V, students using familial resources only, e.g., work other than work-study or direct familial subsidy. Students in Groups I through IV may also be receiving familial aid in addition to the type of aid indicated by the Group. Students persisting in school are placed in Groups I through V in subsequent years based on their student-aid status in that year. A persister is a student who had full-time student status in the fall of 1972 and maintained that status over the years covered by this study or received a degree or other formal award in the last year of full-time enrollment or received the award in the year following full-time attendance. A student is a dropout for a given year if the student was not a persister in the immediately succeeding year. Once a student drops out he/she is not considered again in these analyses regardless of subsequent enrollment status.

Two way analysis of variance (ANOVA) was the analytic technique used to test for differences in dropout rates among the five financial aid groups. The variables socioeconomic status (SES), ability, grade point average (GPA), and parental income were each used as blocking factors in order to obtain separate estimates of the dropout rates in the categories of these variables and to control for the effects of these variables on the financial-aid groups. Each of these blocking factors, except parental income, was used in a sequence of ANOVA's to test the dropout rates of students in the five financial-aid categories for the years 1972, 1973, and 1974. Parental income was reported only in the Base-Year Survey of the NLS, and it was felt that any extrapolation of this variable for later years could not be justified.

Each student was categorized as either high or low for a given blocking factor according to the following criteria. Students with a raw SES score at the mean or higher than the mean SES score for NLS respondents were categorized as having high SES, those below the mean as low SES. Students with a mean ability score at or higher than the mean ability score for all postsecondary attending NLS respondents were categorized as high ability, those below as low ability. High GPA students were those reporting grades of mostly B or higher while those reporting mostly C or lower were classified as low GPA students. Students reporting parental income of $10,500 or higher were classified as high parental income, those below $10,500 as low.

ANOVA requires that the dependent variables used in analysis be normally distributed. Since sample proportions, such as those used as dropout rates in the analyses reported here, are rarely normally distributed, they must be transformed to meet the normality criteria imposed by ANOVA. The arcsine transform proposed by Dixon and Massey (1969, p. 324) to normalize sample proportions was used in this study.

The original ANOVA's run on these data used only a single proportion for each treatment; severe interaction was noted in several of the ANOVA's. This problem was solved by randomly assigning observations within a given treatment to one of five subsamples and using the dropout proportions of these five subsamples as replicated observations within a treatment. The dropout proportions reported in each treatment cell in the tables below are thus the average of these five proportions.

Results of the ANOVA's using Ability as a Blocking Factor

The results of the series of ANOVA's using ability as a blocking factor

Table 1. Dropout Proportions of High and Low Ability Postsecondary Students in Financial Aid Groups I through V in the Years 1972, 1973, and 1974.

Ability Level	Financial Aid Group: Group I Loans Only	Group II Loans ≥ Other Aid	Group III Loans < Other Aid	Group IV Other Aid Only	Group V Familial Aid Only	Total
1972 Data						
High	.194	.142	.146	.147	.185	.163
Low	.292	.181	.209	.246	.307	.247
Total	.243	.161	.178	.197	.246	.205
1973 Data						
High	.152	.087	.069	.088	.116	.103
Low	.160	.110	.123	.142	.180	.143
Total	.156	.099	.096	.115	.148	.113
1974 Data						
High	.084	.047	.072	.053	.073	.066
Low	.053	.097	.078	.109	.076	.082
Total	.068	.072	.075	.081	.074	.074

were surprising (see Table 1). It had been anticipated that low ability students would have higher dropout rates than high ability students in all three of the years tested. Such was not the case. The ability factor was significant in the ANOVA run on the 1972 data ($p = .001$) but not in either of the later years. Based on these estimates low ability students drop out during or after their first year of schooling at a rate that is one and one-half times that of high ability students. For students persisting beyond the first year of schooling, there were no significant differences in dropout rates detected between high and low ability students dropping out during or after their second or third year of schooling. If postsecondary education is performing a sorting function for society based on ability, apparently the major portion of this function is accomplished during the first year of postsecondary schooling since this is the only year showing a significant difference in dropout rates between high and low ability students. Total dropout rates also decrease from 1972 to 1973 and from 1973 to 1974, not quite as sharply between the later years as between the earlier years.

The results of the ANOVA with respect to the financial-aid factor were similar to those of the ability factor. Significant differences were found among the financial-aid groups in the 1972 analysis but not in either of the later two analyses. Scheffe's method of multiple comparison procedure was used to determine specific differences among the financial-aid groups in 1972. The results of this procedure showed that Group I, the loans only group, had a significantly higher dropout rate than did the group using loans in combination with other aid, an equally weighted average of the rates for Groups II and III. Group I also proved to have a significantly higher dropout rate than Group II alone. Testing Group V against all of the other groups showed

exactly the same results as did Group I. Group V had a significantly higher dropout rate than Group II and also had a higher rate than the average of Groups II and III. No other significant differences were found.

Students relying on loans only or familial aid only seem to drop out of school at approximately the same rate. Each of these groups had a significantly higher dropout rate than students using loans in combination with other forms of student financial-aid. The dropout rate of the loans only group and the familial-aid only group was approximately one and one-half times the rate of students using loans in combination with other forms of aid.

Dropout rates were highest where financial risk was highest (loans only or family-aid only) for both high and low ability groups. The presence of other forms of student aid was associated with lower dropout rates for both high and low ability students. This suggests that increases in federal grants and in other forms of student aid such as work-study funds may prolong college attendance for large numbers of students who otherwise would have to bear the full brunt of financial risk.

Results of the ANOVA's using Grade Point Average as a Blocking Factor

Statistical results of these series of ANOVA's proved to be somewhat different in terms of significance of the factors than the ability analysis (see Table 2). The GPA factor proved to be significant in all three years analyzed, 1972 ($p = .001$), 1973 ($p = .001$), and 1974 ($p = .003$). The financial-aid factor proved to be significant only in 1973 ($p = .017$), but the Scheffe multiple comparison procedure did not produce any significant differences between any of the groups of interest in these analyses.

Note that the dropout rate for the high GPA students in 1973 is less

Table 2. Dropout Proportions of Postsecondary Students Having High and Low Grade Point Average in Financial Aid Groups I through V in the Years 1972, 1973, and 1974.

	Financial Aid Group					
GPA	Group I Loans Only	Group II Loans ≥ Other Aid	Group III Loans < Other Aid	Group IV Other Aid Only	Group V Familial Aid Only	Total
1972 Data						
High	.236	.130	.163	.149	.180	.172
Low	.290	.264	.218	.326	.354	.291
Total	.263	.197	.191	.237	.267	.231
1973 Data						
High	.112	.069	.053	.086	.100	.084
Low	.252	.147	.126	.203	.245	.194
Total	.182	.108	.089	.145	.173	.139
1974 Data						
High	.045	.052	.050	.033	.051	.046
Low	.051	.213	.199	.272	.230	.193
Total	.048	.133	.125	.153	.140	.120

than half what it was in 1972 and is halved again in 1974 when compared to 1973. The rate for the low GPA students also decreases from 1972 to 1973 but not quite as sharply as for the high GPA students. From 1973 to 1974 the rate remains almost constant at slightly more than 19% for this lower GPA category. The dropout rate for those students with low GPA's in 1972 was almost twice the rate for those with high grades, and a higher rate of mortality for those with lower grades persists in each of the two later years.

Results of the ANOVA's using SES as a Blocking Factor

In the ANOVA run on the 1972 data both the SES and the student aid factor were significant at the $p = .001$ level. Since the interaction between these two factors was also significant ($p = .031$), only treatment level means could be tested (see Table 3).

No significant differences of interest were found between any of the pairs of high SES groups in these analyses. Neither high SES Group I nor high SES Group V differed statistically from any of the other high SES groups. The low SES category did produce some significant differences. The low SES students in Group I were found to have a significantly higher dropout rate than those students in low SES Group II. Similarly, students in low SES Group V had a higher dropout rate than those in low SES Group II. Students with low SES relying on loans as their only source of non-familial aid or low SES students relying only on familial aid have a dropout rate almost double the rate for students whose loan aid exceeds the other non-familial sources of aid.

Although the differences between the dropout rates of high SES students and low SES students in the various aid groups seem to be quite different, only two significant differences were found. High SES Group III proved to

Table 3. Dropout Proportions of High and Low Socioeconomic Status Students in Financial Aid Groups I through V in the Years 1972, 1973, and 1974.

	Financial Aid Group					
SES	Group I Loans Only	Group II Loans ≥ Other Aid	Group III Loans < Other Aid	Group IV Other Aid Only	Group V Familial Aid Only	Total
1972 Data						
High	.198	.172	.117	.162	.220	.174
Low	.289	.150	.211	.210	.281	.228
Total	.243	.161	.163	.186	.251	.201
1973 Data						
High	.124	.060	.066	.078	.127	.091
Low	.186	.122	.105	.136	.171	.144
Total	.155	.091	.086	.107	.149	.118
1974 Data						
High	.049	.029	.069	.067	.069	.057
Low	.109	.087	.080	.063	.099	.088
Total	.079	.058	.074	.065	.084	.072

have a significantly lower dropout rate than did low SES Group I and low SES Group V. These latter two groups have dropout rates almost two and one-half times the dropout rate of students with high SES whose loan aid is less than the dollar amount of their other forms of aid.

The 1973 ANOVA in this sequence of analyses proved to be significant for both the SES factor ($p = .008$) and the student-aid-group factor ($p = .028$). Low SES students drop out at a rate that is one and one-half times the rate of the high SES students.

Although the student-aid-group factor showed significant differences, there were no significant differences found in any of the contrasts of interest in this study. The dropout proportions of Groups I or V did not differ statistically from those of Groups II, III, or IV. Thus for purposes of this analysis there were no differences in the dropout proportions of the five groups.

In the 1974 analysis, as in the two preceding analyses involving SES, there was a significant difference ($p = .009$) between the high and low SES categories. This amounted to a 3.1 percentage point difference between the low SES group with a dropout rate of 8.8% and the high SES group with a rate of 5.7%. Again as in earlier analyses there was a marked progressive decrease in total dropout rates over earlier years. This rate dropped from 20.1% in 1972 to 11.8% in 1973 and then to 7.2% in 1974.

Results of the ANOVA using Parental Income as a Blocking Factor

Table 4 shows the average dropout proportions calculated from the sample for the ANOVA using parental income as the blocking factor. Both the parental-income factor ($p = .029$) and the student-aid-group factor ($p = .001$)

Table 4. Dropout Proportions of High and Low Parental Income Students in Financial Aid Groups I through V in 1972.

Parental Income	Financial Aid Group: Group I Loans Only	Group II Loans ≥ Other Aid	Group III Loans < Other Aid	Group IV Other Aid Only	Group V Familial Aid Only	Total
High	.226	.141	.159	.177	.221	.185
Low	.249	.186	.169	.195	.294	.218
Total	.237	.164	.164	.186	.257	.202

were statistically significant. Students from families with a 1972 income of $10,500 or higher had a dropout rate 3.4 percentage points lower than students reporting a parental income below $10,500.

When the dropout proportions of the several student-aid groups were examined, it was determined that there was no significant difference between the dropout proportions of Group I and Group II, nor was there a significant difference between Group I and Group III. However, when the dropout proportion of Group I was compared with the equally weighted linear combination of the rates of Groups II and III, there was a significant difference beyond the $p = .05$ level. Thus, students relying on student loans as their only form of financial aid had a dropout rate approximately 7.3 percentage points higher than those students using loans in combination with other forms of student aid.

The dropout proportion of Group V was found to be significantly higher than that of Group II, and it was also significantly higher than that of Group III. Students relying on familial aid only had a dropout rate approximately 9.3 percentage points higher than did students using loans in combination with other aid. When students from low parental income families are considered, the percentage point difference between Group II and Group V was 10.8 and the difference between Group III and Group V was 12.5. Students with low family income using loans and other forms of aid have a much better chance of remaining in school than those similarly situated relying solely on parental subsidy or self-support.

There were no other significant differences found between pairs of groups for this factor.

Summary and Conclusions

It is interesting to note that all but two of the ANOVA's showed significant differences between the two levels of blocking factors. The two exceptions were the 1973 and 1974 ability analyses. Since the 1972 analysis showed significant differences between the high- and low-ability groups while the 1973 and 1974 analyses did not, it could be concluded that, once a student was past the first year of postsecondary schooling, ability level as measured by the high and low categories in this paper was not associated with a significant difference in dropout rates.

When the student-aid factor is examined across the three years analyzed, a somewhat different pattern emerges than was found in the blocking factors discussed above. All four of the blocking factors proved to be significant for the 1972 analyses but only three of the analyses showed the student-aid factor to be significant in this year. The grade-point-average analysis showed no significant differences among the five student-aid groups for the 1972 data. Of the three analyses, SES, ability, and GPA, run on the 1973 data, only the SES and GPA analyses proved to be significant on the student aid factor. However, when contrasts were run on the individual student-aid-group dropout proportions, no significant differences were found. The 1974 analyses showed no differences in the student-aid factor in any of the three analyses. Thus, 1972 was the only year in which identifiable differences were found among the dropout proportions of the individual student-aid groups. The type of aid that students received in their first year of postsecondary schooling seemed to be a critical factor affecting dropout rates.

When the dropout rates of the individual groups were compared for the 1972 data, essentially the same pattern was exhibited by each of the analyses

significant for this year. In general, Group I, the loans-only group, and Group V, the familial-aid-only group, had higher dropout rates than those in the group using loans in combination with other aid (Groups II and III combined). This was true for both the parental income and ability analyses. For the SES analysis this proved to be only partially true. Thus it becomes clear that support carrying greater degrees of personal risk, such as loans only and family aid only are generally associated with higher dropout rates, and this is more particularly the case for lower SES students than it is for higher SES students.

The dropout rates of the other-aid-only category were never clearly associated with the higher dropout rate nor were they associated with the lower dropout rate categories. Undoubtedly the dropout rate of those receiving academic scholarships in this category was a confounding factor in these comparisons.

Since low SES students seemed to persist at lower rates when using only loans or only family aid and this type of aid seemed to produce this phenomena only during the first year of schooling, the strategy to raise persistence rates for this type of student would seem to be to make other types of aid available. What is more likely, however, is that the phenomena reported here is just a corrolate of much more complex behavior patterns influencing persistence rates. Since most student aid, at least at the federal level, is need based, it would seem that these students are not availing themselves of student aid opportunities either through ignorance of the programs, reluctance to apply, or lack of perseverance in applying for non-loan types of aid. The factors which operate to influence students' selection of financial aid may have more influence on dropout behavior than does the type of aid itself.

If higher percentages of low SES are expected to persist in higher education programs in the future, research must be undertaken to gain a better understanding of this pattern and to lessen the dropout risk these students face when loans and individual and family support are the chief means of postsecondary financial support.

Reference List

Astin, A. W. Preventing Students From Dropping Out. San Francisco: Jossey-Bass, 1975.

Blanchfield, W. C. "College Dropout Identification: A Case Study." The Journal of Experimental Education, Winter, 1971, pp. 1-4.

Dixon, W. J. and F. J. Massey. Introduction to Statistical Analysis, Third Edition. New York: McGraw-Hill, 1969.

Glenny, L. A. "The State Budget Process: Roles and Responsibilities." In F. Harcleroad (Ed.) Financing Postsecondary Education in the 1980's. Tucson, Arizona: Center for the Study of Higher Education, University of Arizona, 1979, pp. 35-46.

Levinsohn, J. R., L. H. Lewis, J. A. Riccobono, and R. P. Moore. Base Year, First, and Second Follow-up Data File Users Manual. Research Triangle Park, North Carolina: Research Triangle Institute, July, 1976.

Morgan, A. W. "Budgeting Approaches in the 1980's: Looking for Mr. Goodbar." In F. Harcleroad (Ed.) Financing Postsecondary Education in the 1980's. Tucson, Arizona: Center for the Study of Higher Education, University of Arizona, 1979, pp. 47-66.